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Clean Energy from Waste

Our first food waste recycling project converts food waste and green waste into clean natural gas.



Distributed Energy Systems

Combining heat and power generation, our highly efficient Distributed Energy Systems are helping to reduce energy costs.

Mainland Utility Businesses



Commercial Laundry Business

We are exploring a new opportunity with commercial laundry business that serves hotels in affluent cities.



Mainland Utility Businesses

The year 2019 marked the 25th anniversary of Towngas in mainland China since the establishment of our first joint venture in Panyu, Guangzhou in 1994. Today, our mainland business has expanded to include 132 city-gas projects serving around 30 million customers in 23 provinces, autonomous regions and municipalities. With the growing demand for natural gas and the support of the national Environmental Protection Policy to replace coal, Towngas is contributing to an even more sustainable future for mainland China.

Energy for a Sustainable Future

In 2019, mainland China struggled against economic headwinds brought about by China-US trade disputes. Despite the difficult business environment, Towngas' overall business performance was satisfactory as a result of our efforts to increase sales and identify new business opportunities.

The demand for our natural gas remained high throughout 2019, enabling us to achieve an average of double-digit growth in sales. Our city-gas business recorded a total volume of gas sales of around 25,550 million cubic metres, which was 11 per cent higher than in 2018.

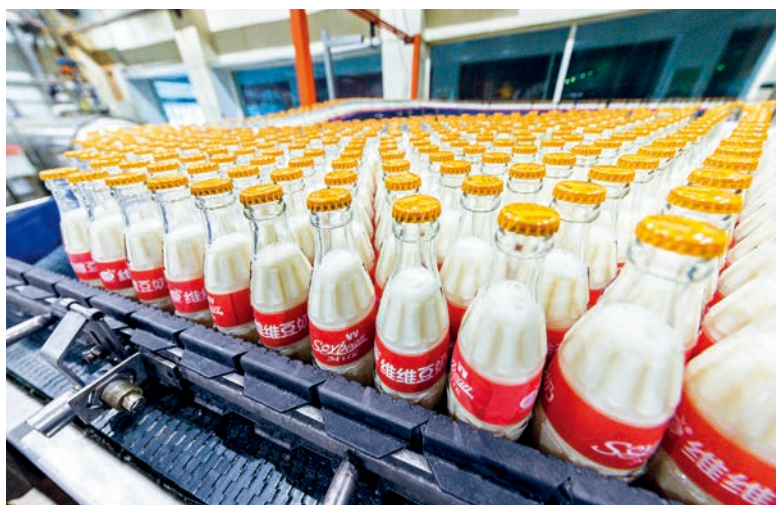
The growing demand for gas can be attributed to the Chinese government's coal-to-gas policy and commitment to reducing



carbon emission intensity. As a supplier of natural gas, the cleanest fossil fuel, we are playing a significant role to support this policy by introducing highly efficient gas applications for customers in a wide range of trades and industries. These include manufacturing industries such as steel, ceramics, glass,

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We supply gas to a glass factory in Zibo, Shandong province for manufacturing processes such as forming and polishing.

textiles and food as well as businesses in the commercial sector, such as laundries, hotels, restaurants and entertainment



In Xuzhou, Jiangsu province, this soybean milk factory utilises gas boilers to generate steam for sanitising soybean milk and bottles.

theme parks. Through our efforts to help customers convert from coal to natural gas, we are contributing to the reduction of pollution and, thus, a cleaner environment.

Distributed Energy Systems (DES) have proven to be a promising business for us. Strong growth has been recorded in this business since it started in 2017. In 2019, we secured eight new DES projects in Anhui, Hebei, Henan, Zhejiang and Guangdong provinces, for an equivalent of 400 million cubic metres in total gas consumption per year. As we continue to explore opportunities in this market, we are aiming to reach a target of 3.5 billion cubic metres in annual DES gas sales by the year 2022.

More and more commercial and industrial customers are recognising the value of these combined heat and power

systems, which can offer energy efficiency rates of up to 80 per cent or more. They are particularly in demand in industrial parks, where a centralised energy supply can be used to generate electricity and simultaneously produce hot water, steam and chilled water through waste heat. As we also see strong demand for residential space heating and steam supply in winter, especially in the northern region of China, we are encouraging the adoption of DES by local districts for the increased energy efficiency and cost savings these systems offer.

Similarly, we would like to enter the new era of Smart Energy by developing an energy portfolio encompassing electricity, steam, natural gas and renewable energy, all of which would be integrated and managed using artificial intelligence and big data via the Internet to achieve higher energy efficiency.

In addition, we have identified new business opportunities among our existing city-gas projects arising from the Chinese government's policy in July 2019 to lift the cap on equity investment by foreign investors. This policy overturned the requirement of Chinese partners to hold a majority stake in certain industries, such as city-gas and thermal pipeline networks, in cities with a population greater than 500,000 people. As a result, we now have greater flexibility to invest in the city-gas projects we currently operate.

Building Up Midstream Businesses

We strive to secure a reliable supply of natural gas by investing in midstream facilities, such as long-haul pipelines and gas storage facilities, in accordance with our diversified gas sourcing strategy.

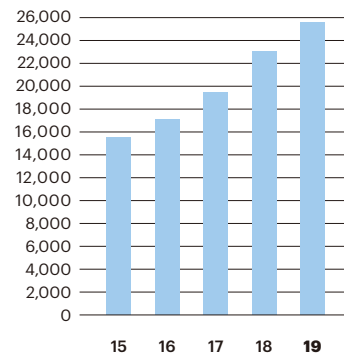
Since 2016, we have integrated the Group's gas purchasing functions to expand our supply sources. In 2019, we partnered with a number of upstream suppliers to purchase 140,000 tonnes of liquefied natural gas (LNG).

With an initial storage capacity of 460 million cubic metres, the first phase of our underground salt-cavern gas storage facility in Jintan, Changzhou, Jiangsu province went into full operation during the year. The second phase is currently under construction towards a targeted completion in 2023. Once this phase is in full operation, it is expected to provide a total storage capacity of 1.1 billion cubic metres and a working volume of 660 million cubic metres. The facility will not only increase our storage capacity but also help us to regulate gas supply and prices more effectively.

This process, called “peak shaving”, enables us to save up gas in the summer months when demand and fuel costs are lower and provide additional gas supply during the winter peak load when demand is higher.

In another development, the Chinese government in 2019 established a national oil and gas pipeline network company by merging the gas pipeline assets of the three state-owned oil and gas companies. This represented a major breakthrough for energy enterprises such as ours, since the new oil and gas pipeline network company will open up the national

China Joint Ventures Gas Sales (million m³)



pipeline network to third parties. For Towngas, it will enable us to diversify our gas supply channels and reserve more gas for our winter supply, which will have the effect of reducing our average procurement costs.

During the year, our Jintan storage facility fulfilled its peak shaving function and launched an auction for its stored gas on the Shanghai Petroleum and Natural Gas Exchange (SHPGX), the national trading platform for natural gas, liquefied petroleum gas, and petroleum. In December 2019, the storage facility successfully supplied gas to the main network of China National Petroleum Corporation’s West-to-East Gas Pipeline, which helped us to attain targeted gas sales of up to 60 million cubic metres during the winter.



A NEW MARKET

During the year, we launched a new commercial laundry business in Guilin, one of mainland China’s most popular tourist destinations. There is great potential for this business, particularly among hotels, which typically have 15 items per room that must be laundered on a regular basis.



Our plant at Suzhou Industrial Park can handle 500 tonnes of food waste, green waste and landfill leachate each day.

Russia's Siberian east-route pipeline that connects to mainland China's northern industrial hub was commissioned in December 2019, which in its first phase will deliver 5 billion cubic metres of natural gas annually. The pipeline will supplement existing natural gas imports mainly from Central Asia and Myanmar, as well as other LNG sources, is expected to increase upstream gas supplies for our city-gas projects in northeastern and northern China.

In the future, we will further expand our midstream businesses and secure more energy sources through joint purchasing and marketing of LNG, importing overseas LNG, as well as storing gas and auctioning it via the SHPGX. It is estimated that the purchase and sales volume of LNG will reach 1.5 million tonnes by 2024.

Clean Water Supply and Food Waste Recycling

Since 2005, we have been operating a water supply and wastewater treatment business in mainland China through our



wholly-owned subsidiary, Hong Kong & China Water Limited (Hua Yan Water). Today, this company has seven water projects.

We see great potential for this business in mainland China as clean water resources have been assigned a high priority. During the year, we sold 930 million tonnes of water to 2.4 million customers, an increase of 52 per cent over the previous year. This considerable growth can be attributed to water sales by Foshan Water Environmental Protection Co., Ltd (Foshan Water), a company in which we acquired a 26 per cent interest in late 2018.

Foshan Water, our first water services project in the Greater Bay Area, is providing new opportunities for our water services and environmental business and creating synergy for our other businesses in the region. Foshan Water, which currently serves more than 1 million

households, recorded 430 million tonnes in water sales during the year – close to the volume of all other Hua Yan Water projects combined.

Another business with good potential is our first food waste project. Located at Suzhou Industrial Park, this business is engaged in the recycling of local food waste, green waste and landfill leachate for conversion into natural gas, oil products, solid fuel and fertilisers for use in the Park. The project commenced trial production in February 2019 and had produced more than 2 million cubic metres of natural gas by the end of the year.

In the future, we will continue to explore the urban food waste and environmental hygiene market as well as other suitable wastewater and organic waste treatment projects.

Extended Services Businesses

Our Bauhinia brand has been gaining widespread acceptance among customers looking for safe, high quality appliances. To date, we have sold a cumulative total of more than 6.5 million Bauhinia appliances since its launch in 2005.

During the year, we focused our marketing efforts on smart kitchens, space heating and clothes dryers as part of our Towngas Comfort Home concept. Our strategic objective with this business is to increase the number of gas applications in customers' homes in order to boost gas consumption and gain greater market share.

In addition to setting up "experience zones" at our sales outlets to promote space heating, we looked to property developers for achieving bulk purchase deals of gas clothes dryers. On the way towards the smart kitchen of the future, we are developing a line of Bauhinia smart appliances that are Internet of Things (IoT) enabled and can be remotely controlled. We expect to launch some of these smart appliance models in 2020.

In the Mia Cucina Lifestyle Gallery at Suzhou Industrial Park, customers can view our latest premium cabinets.

As a result of our marketing efforts, we achieved encouraging sales of over 800,000 appliances in 2019, a rise of 4 per cent from the year before. Of these, 35,000 were gas clothes dryers and 30,000 were combi boilers.

Since 2015, we have offered a Total Kitchen Solution of premium kitchen equipment and cabinets under the Mia Cucina brand. In 2019, we succeeded in acquiring 14 new sales contracts to supply about 7,100 sets of Mia Cucina for over RMB65 million.

To promote our Mia Cucina cabinets, we set up a showroom – the first Mia Cucina Lifestyle Gallery – at Suzhou Industrial Park in early 2019. Aimed at property developers, this showroom has proven to be an ideal venue for showcasing the elegance, style and quality of the brand.

We set up the Towngas Lifestyle e-commerce platform in 2015. Accessible via websites, social media and mobile apps, the platform continued to provide a convenient online shopping experience and gas account services for customers. It offers a variety of high quality lifestyle services and products, including festive foods, kitchenware, gas related insurance and more.

To help our joint venture companies deliver better services, in 2019 we introduced more back-end functions on this platform, such as e-invoicing, account opening for commercial and industrial customers, WeChat and Alipay mini-applications, as well as a coupon module. We also developed a smart metering module to accommodate future developments in 5G and Narrowband IoT technology.





A technician carries out a regular inspection at one of our gas receiving stations, in keeping with our rigorous approach to safety.

During the year, a total of 82 joint ventures made use of the Towngas Lifestyle platform to serve more than 13 million customers, including 6.7 million registered customers, who made a total of over 9 million transactions valued at RMB1.5 billion.

In October 2019, we extended the trusted Bauhinia brand into high quality local agriculture produce with the official opening of Bauhinia Farm in Zhenjiang, Jiangsu province. Covering an area of about 66.7 hectares, the farm provides locally grown hydroponic produce, livestock feed, sauces and other non-staple foods. In the future, we intend to collaborate with our city-gas joint ventures on sourcing local produce in various regions of the country, which will be reviewed and certified by Bauhinia Farm prior to their launch in the market.

Focus on Safety

The safety of our staff and customers continued to take the highest priority during the year, as part of our commitment not only to maintaining the highest standards of safety but to improving our capabilities in accident prevention.

In 2019, which we designated the Year of Strengthening Work Safety Management, we continued to carry out in-situ safety and risk audits for our project companies, as well as monthly safety inspections by the general managers of our utility joint ventures. We also used analytic tools such as risk assessment to enhance our operational safety and prevent accidents.

Soon after we started operating in mainland China, we introduced a proactive programme of regular

safety inspections for residential customers' homes. These inspections have now become a model of good service as well as a common practice throughout the industry.

We have also dedicated significant resources towards educating our customers on safe gas usage, including the proper handling of gas and appliances. In 2019, we held the Gas Safety for All Creative Competition, in which more than 100 project companies disseminated safety messages to over 6 million customers.

During the year, we established a Safety Network to promote communication on safety among our project companies. Through this channel, we encourage the heads of our companies to increase accountability by motivating their staff to follow safe work practices in line with our corporate culture.

In 2019, we recorded no serious gas incidents and achieved our target of zero accidents. The number of third-party damage incidents and gas pipe network leakage cases both declined.



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Joey Leung
Graduate of 2nd Intake
Disciplines Escalier Diploma
in Culinary Arts





Recipe for Success

At the Towngas Cooking Centre, cooking enthusiasts can become expert chefs after completing the prestigious Disciples Escoffier Professional Diploma Programme.



Premium Kitchens

Our premium line of Mia Cucina kitchen cabinets continued to grow in popularity and became the preferred choice of property developers.

Hong Kong Gas Business



A Smarter Meter

With our new Bluetooth-equipped meter, customers can enjoy greater convenience and report their gas meter readings with just one click.



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Hong Kong Gas Business

We endeavour to provide customers with a clean source of fuel as well as high quality appliances and lifestyle products for their homes. Our goal is to create value for the people we serve with innovative solutions that contribute to a better quality of life and a more sustainable future.

Overcoming Challenges

For Towngas and Hong Kong, 2019 was a difficult and challenging year. The global economic environment and trade disputes between mainland China and the US severely affected Hong Kong's import and export sectors as well as logistics businesses. The social conflict incidents that started in June caused a sharp drop in tourist numbers and spending by local residents, adversely affecting commercial and industrial gas

sales. Residential gas sales were also affected as a result of higher average temperatures throughout the year.

During the year, total gas sales amounted to 28,712 million MJ, a drop of 2.8 per cent from the previous year. The number of new customers in 2019 rose by 25,216 accounts to over 1.93 million.

In this adverse business environment, we made a strong effort to keep our costs at a low

but acceptable level while continuing to deliver efficient and courteous service to our customers. Internally, we developed mobility solutions to streamline work processes and lower service operating costs. We also made use of multi-channel purchasing and low-cost substitutes to minimise our material expenses.

With regard to our business growth in the local market, we pursued several avenues such as new property developments,

REKINDLING OUR HERITAGE

On 23rd December 2019, the four historical gas lamps on Duddell Street in Central were ignited once again. After suffering severe damage during Typhoon Mangkhut in September 2018, they were sent to London and faithfully restored to their original condition and have now resumed operation from 6pm to 6am every day. Today, there are 56 modern and heritage gas lamps lighting up various parts of Hong Kong.





Thanks to our gas water heating system, our hotel clients have a more efficient way to heat water for showers, space-heating and swimming pools.

we offered a total application system that incorporates solar panels and gas-fired water heaters to reactivate their gas desiccant dehumidifier. With this system, the indoor air quality of medical centres and clinics in the building will be improved as it allows for precise adjustments in indoor humidity.

While developing the market for gas applications in hospitals, clinics, hotels and other commercial buildings, we have discovered that humidity control is an important factor in improving indoor air quality. Accordingly, our gas desiccant dehumidification system is an attractive solution for eliminating the damp air prevalent in Hong Kong and southern China throughout most of the year.

In the year ahead, we look forward to the new business opportunities arising from the expansion of Hong Kong International Airport. Several developments are under way with this project, including the new T3 terminal, East Hall expansion and AsiaWorld-Expo Phase 2 as well as new hotels, restaurants and shopping centres. All will have massive applications for gas cooking, water heating, absorption chillers and desiccant dehumidification.

a major source of business for us. We have thus been working closely with developers to maximise town gas applications in the project development stage.

In addition, we looked at opportunities to acquire new customers and increase gas consumption in the commercial and industrial (C&I) sector. To that end, we not only promoted the conversion of non-gas applications but continued to diversify beyond the conventional use of gas

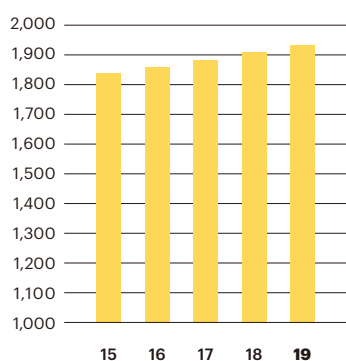
for cooking and heating water into gas applications such as absorption chillers and desiccant dehumidifiers.

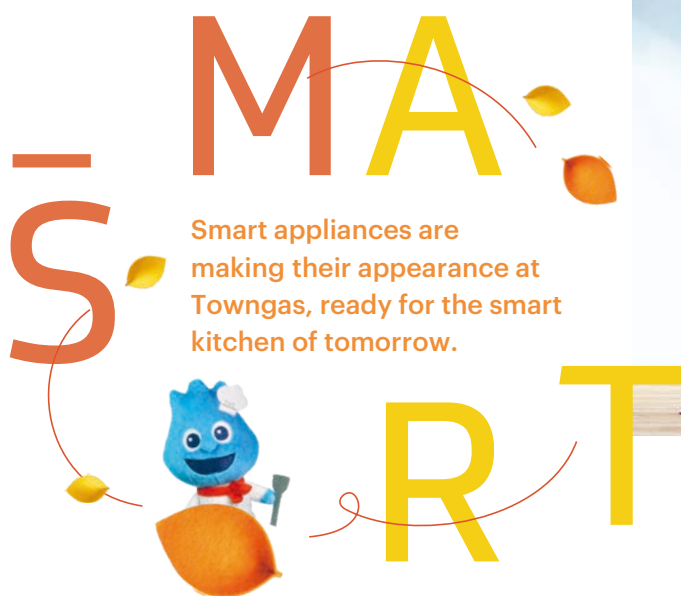
Despite the economic difficulties of the year, we were able to secure new hotel and hospital customers such as Hong Kong Children's Hospital, The St. Regis Hong Kong, Rosewood Hong Kong, and Hong Kong Ocean Park Marriott Hotel, among others. We also saw existing customers, including New China Laundry and A.S. Watson, increase their gas usage. For C&I customers such as Caritas Medical Centre and Shum Wan Laundry, we succeeded in having them replace their diesel boilers with gas boilers, which contributed to additional gas sales and helped to reduce carbon emissions.

Another project we secured during the year was the new H Zentre on Middle Road, the first purpose-built health and wellness hub in Hong Kong. For this customer,

Number of Customers

Company (Thousand)





Smart appliances are making their appearance at Towngas, ready for the smart kitchen of tomorrow.



Our TGC x Hello Kitty built-in hob with an adorable design provides a cooking experience the whole family can enjoy.

A Pioneer of Green Energy

In Hong Kong, we are utilising landfill gas as a renewable source of clean energy. The Alice Ho Miu Ling Nethersole Hospital was our first project based on this technology, with a combined heat and power (CHP) project utilising gas from the North East New Territories Landfill site.

The success of this project has sparked the interest of other hospitals in Hong Kong, and we have been working with the Hospital Authority to include CHP arrangements in the blueprint stage of their new hospital developments.

Product Development and Marketing

Our appliances continued to enjoy widespread acceptance

among customers for their quality, innovative features and the expert backing of our service professionals. In 2019, sales of appliances increased by 2.4 per cent for a total of over 290,000 appliances sold. Our premium line of Mia Cucina kitchen cabinets also continued to grow in popularity with customers, including property developers. In 2019, we sold a total of about 4,400 kitchen cabinets for new property development projects.

In order to provide greater convenience and safety for our customers, we have put considerable resources into our smart kitchen concept. For customers who might leave a cooking appliance unattended, we have designed a model equipped with an add-on device that enables users to turn off the appliance with a mobile app if

they forget to do so, even after leaving home. Another model automatically shuts off if it reaches a high pre-set temperature. In future, we plan to develop more smart appliance models and launch them in the market.

To create added value and provide an exciting new online shopping experience for customers, we will be launching a bonus point loyalty programme in 2020 on our e-commerce platform.

Reputation for Excellent Service

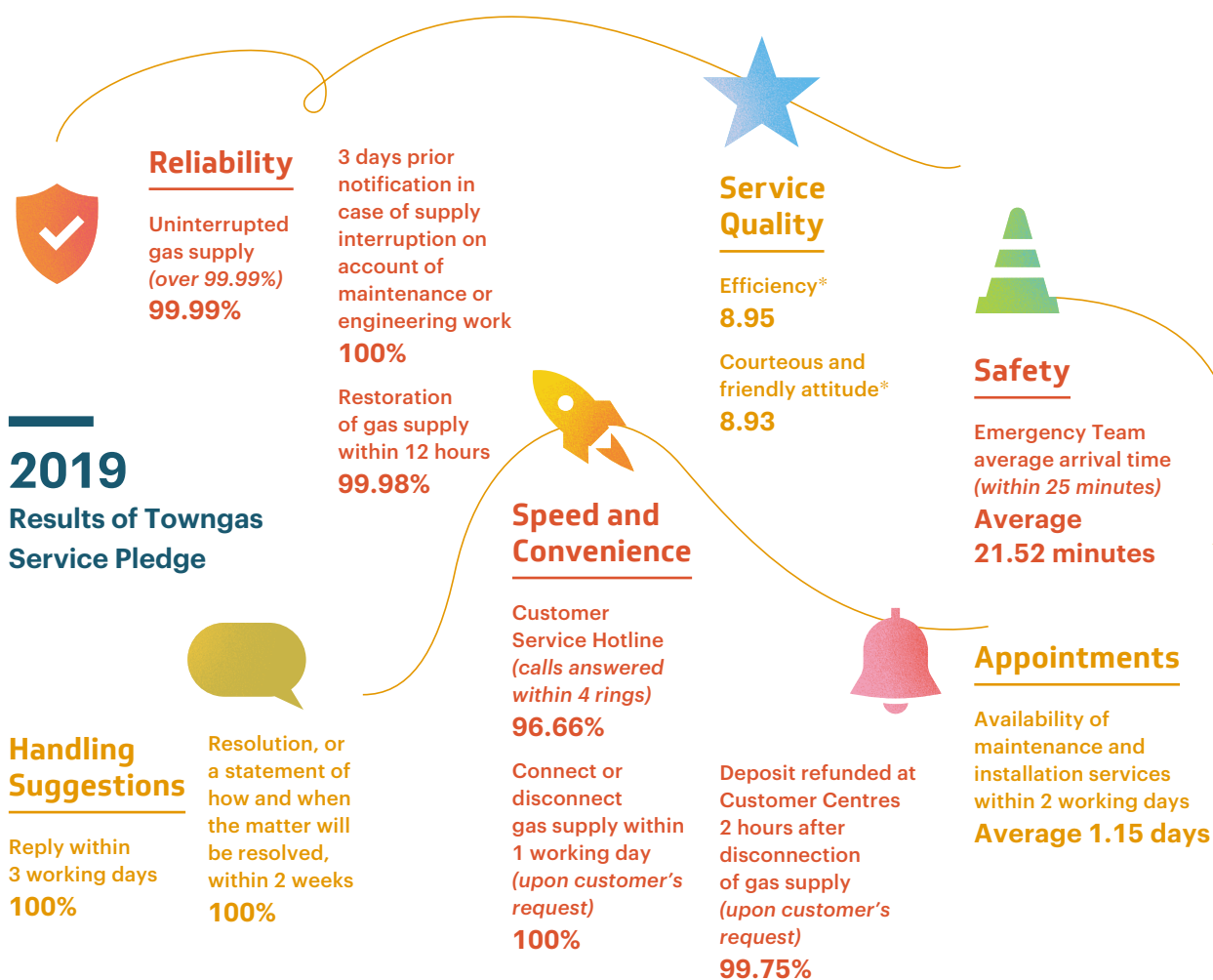
We have developed a strong reputation for our ability to provide a safe, reliable supply of gas as well as efficient and caring services.

During the year, we continued to focus on innovation as a means of improving productivity and service delivery. In particular, we are



Our new smart meters are designed for more convenient meter readings and more accurate billings.

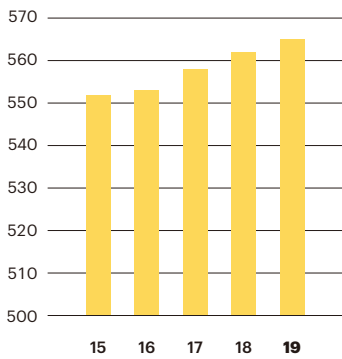
The Towngas Cooking Centre collaborated with Institut Culinaire Disciples Escoffier to offer professional level classes to people who are passionate about cooking.



* The result was based on surveys conducted by an independent research company. Our target is to exceed a score of 8 out of 10.

Number of Customers per km of Mains

Company



looking at new developments in the Internet of Things and artificial intelligence for our operational equipment and devices.

One example is a smart meter equipped with Bluetooth, which has been installed in over 87,600 homes since its launch in May 2018. Customers can simply download a mobile app and link it to the smart meter, then the gas readings will be read and transmitted to our system via the Internet.

Our frontline staff offer efficient and comprehensive services that have earned high praise from customers, as demonstrated by the more than 5,900 complimentary letters we received in 2019. In recognition of our outstanding service quality, we received

the 2019 Service Retailers of the Year – Quality Living Category Award from the Hong Kong Retail Management Association. We also won the Gold Award in the Mystery Caller Assessment Award – Commerce and Utilities for our Mia Cucina 24-hour Customer Service Hotline from the Hong Kong Call Centre Association.

Keeping Our Infrastructure Safe and Secure

Towngas takes the safety of customers seriously and has put in place a proactive maintenance and inspection regime that makes certain our gas network and infrastructure are highly safe and reliable.

To ensure a reliable gas supply and network integrity, we undertake gas leakage surveys, closely monitor third-party construction activities and carry out timely pipe replacements. In 2019, the number of publicly

reported leaks in the network reached a record low for the second consecutive year, while third-party damage and the gas leakage rate were kept at a low level.

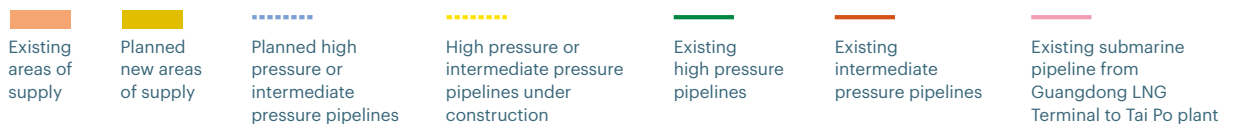
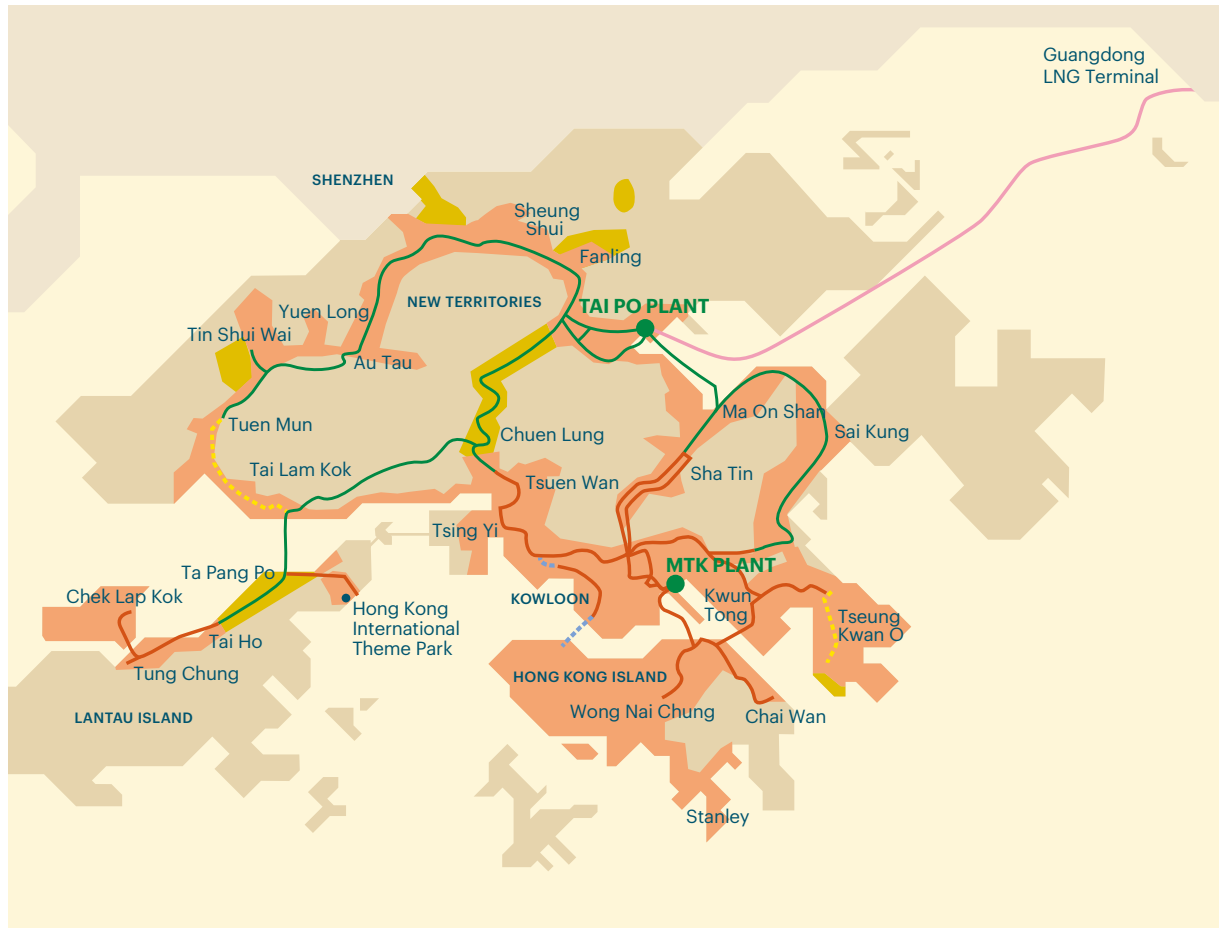
In 2019, we continued to develop innovative tools that improve our operational efficiency. A mini-tunnelling machine was utilised for trenchless pipeline construction in congested areas where open-cut excavation is difficult. Together with our existing Little Swan remote-controlled excavator that reduces construction noise, these tools are helping to improve safety, efficiency and productivity, bring down costs and minimise nuisance to the public.

We have also introduced innovations that help to ensure the safety of our customers’ homes as well as improve our service quality. These included a Drone Riser Inspector and a Long Range Camera with Laser Methane Gun,



The remote-controlled Little Swan excavator, which is equipped with a mobile muffler box, minimises noise at sites and makes night-time roadworks more efficient.

Towngas Network in Hong Kong



which allow our frontline technicians to remotely inspect gas service pipes with a high degree of accuracy. To improve the traceability of our records, our staff can now use a tablet or mobile phone to capture worksite details or record inspection results.

In 2019, we achieved another breakthrough for the quality and safety of our infrastructure with the first-time use of photogrammetry for pipelaying. Photogrammetry was used in a number of new distribution pipelaying contracts in 2019.

The new technique can produce a 3D image record that forms part of the as-built drawing of our network. With the photos that are taken, much more information on the pipeline installation can be captured, which is vital to determining network quality.

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Advanced Biofuel from Bio-grease

Using its proven patented technology, ECO shipped over 24,000 tonnes of hydro-treated vegetable oil to Europe.

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New Energy and Diversified Businesses



Advanced Biofuel from Agricultural Waste

In a trial of ECO's first biomass utilisation project in Tangshan, Hebei province, we are getting ready to test our technology for producing cellulosic ethanol, an advanced biofuel made from agricultural waste.



Clean Coal Chemical Project

At ECO's plant in Inner Mongolia Autonomous Region, we are producing ethylene glycol, a premium chemical converted from syngas.

New Energy and Diversified Businesses

The core strategy of our new energy business is to turn low value feedstock into high value products through innovative technology. With a portfolio of proprietary technologies that continues to grow, we are making greater contributions to environmental protection.

ECO: A Leader in Green Energy

Established in 2000 in Hong Kong, ECO Environmental Investments Limited (ECO) is our business platform for developing new forms of clean energy, advanced chemicals and new material products from waste feedstock. Our objective with ECO is to become a global leader in the green industry, providing solutions that address the environmental challenges associated with climate change.

Innovation that drives value creation is the cornerstone of ECO's business. In pursuit of this strategy, we have established research and development facilities in Shanghai and Jiangsu province. At these two facilities,



our researchers develop products derived from biomass-based and recycled carbon-based materials, with a focus on advanced biofuels and eco-friendly materials.

From LNG to Advanced Biofuels

ECO's plant in Shanxi province is now in its 11th year of operation. This is where we convert coalbed methane extracted from neighbouring coal mines into liquefied natural gas (LNG).

Following a successful trial, the ECO plant in Zhangjiagang has begun ramping up the production of hydro-treated vegetable oil (HVO).

Since coalbed methane is a potent greenhouse gas (GHG) if released into the atmosphere, this plant has addressed the issues of both climate change and excessive consumption of fossil fuels by not only producing clean-burning LNG but also reducing GHG emissions.

ECO utilises agricultural waste and converts it into high value products.

Using its own patented technologies, ECO produces hydro-treated vegetable oil (HVO) that helps to meet the EU's latest renewable energy targets under Renewable Energy Directive (RED) II and its commitment to reducing emissions under the Paris Agreement.

In 2019, after modification works to overcome a number of technical challenges, the ECO plant at Zhangjiagang, Jiangsu province started stepping up its daily production rate of HVO. Six shipments were delivered to Europe during the year, totalling more than 24,000 tonnes of HVO.

Also in 2019, ECO commenced construction of the second phase of this project, which will bring HVO production capacity to 250,000 tonnes per year. It is expected to be commissioned in mid-2020.

In addition to expanding its HVO plant in Zhangjiagang, ECO is exploring other possible sites for a new HVO plant in Southeast Asia.

ECO sees tremendous growth potential for this business, particularly with concerns over the



possible threat to food security associated with existing biofuels that are mostly derived from food stock and feed. Instead, ECO utilises palm oil mill effluent and used cooking oil, both of which are considered waste residue, to produce HVO. After certification under the International Sustainability and Carbon Certification Scheme, the HVO produced by the plant is recognised as an advanced biofuel.

ECO has successfully developed an innovative technology for decomposing agricultural waste into its three basic components – cellulose, hemicellulose and lignin. The decomposed cellulose can be further processed into cellulosic ethanol, another advanced biofuel as defined under the RED II framework. The feedstock for our biomass project will mostly comprise agricultural waste such as corn cobs and straw. Previously, there was no effective solution for handling this type of waste. Although some waste would be

returned to fields or used to generate power, this was only done in small quantities. By utilising this waste to produce advanced biofuels and high value chemical products, ECO is making the concept of turning waste into treasure a reality.

In 2019, construction proceeded on an agricultural waste utilisation plant in Tangshan, Hebei province as a pilot project for producing paper pulp and furfural and for testing ECO's proprietary hydrolysis technology. Trial production at this plant will begin in the first half of 2020.

Construction of a second plant in Cangzhou, Hebei province was also under way. Once in operation, it will be one of the very few plants of its kind in the world, producing not only cellulosic ethanol as an advanced biofuel, but also furfural as a green building block chemical. This plant is scheduled for completion by the end of 2020.

From Fuels to High Value Chemicals

At our plant in Ordos, Inner Mongolia Autonomous Region, ECO is producing both methanol and, since 2018, ethylene glycol as part of its clean coal chemical project. In addition, there are other opportunities for producing high value chemical products from coal while also minimising carbon emissions. One such opportunity is the production of dimethyl carbonate, which synthesises methanol with carbon monoxide in a more advanced carbonylation process.

With the continuing development of new technologies at ECO, we are confident that substantial

improvements can be made to the traditional coal chemical utilisation technologies to provide much greater environmental benefits.

Business in Hong Kong

The past year was one of the most challenging for Hong Kong, due to the impact of the ongoing China-US trade disputes and social unrest throughout the latter half of 2019. Nevertheless, our aviation fuel and LPG filling station businesses continued to record stable performance during the year.

Our aviation fuel facility, which is under a 40-year franchise agreement with the Airport Authority Hong Kong, supplies

fuel for aircraft at Hong Kong International Airport in Chek Lap Kok. This business operates eight tanks with a gross aviation fuel storage capacity of 264,000 cubic metres as well as a jetty with two berths for receiving fuel from Tuen Mun and delivering it to the Airport via two undersea pipelines. Now a major logistics base for aviation fuel in Hong Kong, it supplies approximately 6 million tonnes of fuel a year and remains one of the greatest profit generators for the Company.

Our five dedicated filling stations serve around 18,000 LPG taxis and most of the LPG minibuses in Hong Kong, 24 hours a day. These stations typically sell around 65,000 tonnes of LPG a year, accounting for about 30 per cent of Hong Kong's auto LPG market.

We also manage landfill gas projects in Hong Kong, using gas collected from strategic landfills in the North East New Territories and South East New Territories. In addition to reducing GHG emissions at the two sites, the treated landfill gas has contributed to the renewable portion of the Group's energy mix.





TGT provides a reliable bespoke cloud computing service at its world-class data centres in Hong Kong and mainland China.

Telecommunications

We operate telecommunications businesses both in Hong Kong and mainland China through Towngas Telecommunications Company Limited, a wholly-owned subsidiary of the Group, and its subsidiaries (collectively known as TGT). With its solid infrastructure and resources, TGT provides services to Hong Kong, mainland China and international telecommunications providers, operators, and enterprises.

The year 2019 marked TGT's 15th anniversary since its start as a small local data centre. Today, it has grown into a company with seven world-class data centres providing up to 16,000 server racks, strong connectivity and advanced data services such as fog and cloud computing.

Another competitive advantage of the Company in Hong Kong is TGT's Glass-in-Gas technology, which allows us to install optical fibres within our extensive gas pipe network for a more cost-effective, interference-free alternative to traditional road opening methods. This technology is now also being applied in mainland China, where our Technical Standards for Laying Fibre Casing Pipe in Gas Pipeline obtained the approval from the China Gas Association.

During the year, an associate company of TGT, Shenzhen Internet Exchange Co., Ltd., received several valued-added telecommunications service licenses in Shenzhen to provide services related to the Internet and data centre businesses in the city. TGT also formed a new joint venture company with its strategic partner

in Beijing. The synergy effect of this partnership enables TGT to integrate its existing resources and accelerate the deployment of its connectivity business while also broadening its interests.

Moreover, TGT plans to set up a local sales team in Taiwan, aiming to establish a presence in this market in order to serve existing customers better, including telecommunications and cloud service providers in Taiwan.

During the year, TGT received the Innovative Data Centre – Gold Award from the Communications Association of Hong Kong (CAHK) at the 2019 CAHK STAR Awards and the Top Third Party Data Centre Award at the 14th China IDC Industry Annual Ceremony.

In future, TGT operations will continue to grow through the pursuit of new business opportunities in Hong Kong, mainland China and overseas as well as the introduction of innovative new technologies such as 5G to the market.

Information Technology

Our wholly-owned subsidiary, S-Tech Technology Holdings Limited (S-Tech), was established to provide our city-gas companies with information technology that supports customer service management.

Today, this business is engaged in cloud software development, solutions implementation and systems integration services that enable our city-gas businesses to manage their advanced customer service and gas piping network systems.

In 2019, S-Tech's online customer service management platform, Towngas Customer Information System (TCIS), covered 85 per cent of the Group's city-gas companies on the mainland. Among these companies, 85 per cent are now using the latest cloud version to reduce operational costs and provide superior service to more than 16 million end customers.

Also during the year, S-Tech cooperated with Shandong Jihua Gas Co., Ltd in Jinan, one of our

major city-gas joint ventures in Shandong province, to introduce a new IT solution, Towngas Total Solution (TTS+). TTS+ is a comprehensive information system that seamlessly integrates Towngas' financial, engineering and purchasing systems with S-Tech's software, including TCIS 3.0, the Virtual Customer Centre (VCC) e-commerce platform, as well as the Towngas Management System and Geographic Information System. All these are relevant and useful IT systems for running gas companies' operations and enhancing customer service levels and productivity. Through this highly integrated TTS+ information system, gas companies can enjoy more flexible interconnections and optimised resources. This total solution was successfully launched in September.

Civil and Building Services Engineering

U-Tech Engineering Company Limited (U-Tech) is a wholly-owned subsidiary of the Group providing consultancy and

engineering contractor services in Hong Kong and Macao. These services include utilities installation, infrastructure construction and civil and building services engineering for public and private projects.

During the year, U-Tech acquired a district cooling mains construction contract from the Electrical and Mechanical Services Department at the Kai Tak development area. Other contracts secured in 2019 include U-Tech's second contract with Evergrande Group for MVAC installation works at their residential development in Cheung Sha Wan, as well as a new contract for the supply and installation of electrical works for Henderson Land's residential development at Kai Tak.

U-Tech's high quality services and safety standards are well recognised in the industry. In 2019, the Company received the Safety Performance Award – Construction from the Occupational Safety and Health Council for the sixth consecutive year.

Manufacturing

M-Tech Metering Solutions Company Limited (M-Tech) is a wholly-owned subsidiary of the Group that develops and markets smart gas meters. These smart commercial and residential meters, which are based on the latest technology, help to satisfy the demand for mobile payments, data management and accurate gas consumption measurement.

In late 2019, M-Tech collaborated with a well-known manufacturer of gas meters in mainland China to launch an advanced residential Narrowband Internet of Things (NB-IoT) smart meter, which replaces conventional IC card meters. This new meter works seamlessly with the Group's two

major IT systems – TCIS and VCC – and is designed to ensure greater data security. It also enables gas companies to perform gas consumption analysis to identify peak-shaving distribution with daily data updates, while providing end-users with the latest smart metering functions, such as mobile payments and gas leakage safety alerts.

As this smart meter is already widely accepted in the mainland residential market, M-Tech has plans to develop a similar meter equipped with NB-IoT modules for the commercial market.

Another wholly-owned subsidiary of the Group, G-Tech Piping System (Zhongshan) Company Limited (G-Tech), supplies high

quality polyethylene (PE) piping, fittings and related ancillary products. With the support of GH-Fusion Corporation Limited (GH-Fusion), a joint venture between Towngas and Fusion Group founded in the United Kingdom, specialising in PE fittings, G-Tech can provide clients with a comprehensive range of products for piping systems.

G-Tech operates eight piping extrusion lines in both its Zhongshan and Maanshan production plants. During the year, G-Tech set up a new distribution centre in Qingdao, Shandong province, thus substantially reducing the logistics costs and time for clients in the northern region. G-Tech now plans to set up more distribution centres in order to satisfy business development needs.

GH-Fusion also continued to explore new business opportunities in overseas markets, including Europe and Asia Pacific.



These automated facilities at G-Tech's manufacturing plant help to increase productivity and efficiency.

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20 Years of Volunteering

Our volunteer team has clocked over 960,000 hours of caring services to the community since its establishment in 1999.



A Greener Home

Our MasterCraft Volunteer Team participated in our Green Flame Project – Upcycling for a Greener Home to help improve the living environment of underprivileged families.

Corporate Social Responsibility



Best Employer

Towngas was ranked in the top three Hong Kong companies among 2,000 global companies on the *Forbes* magazine list of World's Best Employers 2019.

Corporate Social Responsibility

As a leading utility company, we strive to set an example in the way we conduct our business, ensure the health and safety of our stakeholders, protect the environment and serve the community. Our ultimate objective as a socially and environmentally responsible organisation is to become the greenest, most esteemed company in Hong Kong and mainland China.

Towards a Sustainable Future

In our quest to become a more sustainable company, Towngas is guided by an overarching framework that sets out five focus areas for our sustainable development: Creating Business Opportunities; Ensuring Health and Safety; Protecting the Environment; Contributing to Stakeholders; and Strengthening Corporate Governance.

During the year, our businesses continued to support the four key Sustainable Development Goals (SDGs) of the United Nations. Covered under the UN's 2030 Agenda for Sustainable Development, the SDGs we have selected include Goal 6: Clean Water and Sanitation; Goal 7: Affordable and Clean Energy; Goal 11: Sustainable Cities and Communities; and Goal 13: Climate Action.

Our efforts to achieve greater sustainability in our operations have been widely recognised.



In 2019, we earned the Gold Award in the Manufacturing Sector at the BOCHK Corporate Environmental Leadership Awards organised by the Federation of Hong Kong Industries. This was the third time in four years that we have won this award. Moreover, the Business School of the Chinese University of Hong Kong released its fourth Hong Kong Business Sustainability Index, on which Towngas was ranked first among the 50 constituent companies. We were also the first

During the year, we established the MasterCraft Volunteer Team that helps to improve the living environments of disadvantaged families by using our professional skills in design and engineering.

company to achieve a score of 90 or above and reached the top level of "Exemplar".

Promoting Green Awareness

We are working to raise awareness of the importance of environmental protection both in the community and within our own operations.



A participant in our Plantation Enrichment Project takes care of tree seedlings.

Our staff volunteers play a key role towards this objective by organising projects that demonstrate how to lead a more sustainable lifestyle. One example was our Green Flame Project – Upcycling for a Greener Home in partnership with St. James' Settlement. In this project, our MasterCraft Volunteer Team joined primary school students to upcycle waste and create items such as wooden shelves and wall units to improve the living conditions of underprivileged families residing in cramped homes. The children taking part in the project also visited our landfill gas utilisation facility, where they learned about the renewable energy initiatives we are developing.

To help the next generation develop an interest in STEM subjects and learn more about the environmental challenges we face, Towngas organised the Inter-School Environmental Scientific Investigation Competition. Participating students conducted field experiments in hydroponics using equipment upcycled from our scrap polyethylene pipes. From this experiment, students were able to increase their environmental knowledge and enhance their problem-solving skills.

We also continued to work closely with green organisations during the year on programmes to promote environmental protection. One of these was a programme in which HK\$20 was donated to a green group designated by the customer for every new registration in our eBilling service. Concurrently, we launched a publicity campaign to deliver green messages via public transport, radio and online media in order to encourage the public to live a greener lifestyle.

Internally, we organised a number of projects for raising green awareness among our employees. These included workshops to promote recycling and upcycling, a Low Carbon Flame Cooking Demo for green living, and seminars on air quality, biodiversity and food waste.

In order to stimulate innovative thinking on environmental protection, the Managing Director's Award in 2019 was organised under the theme, "Green Towngas".

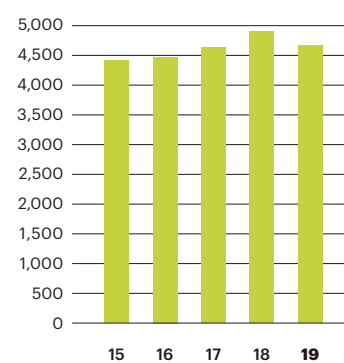
We also rolled out a programme inspired by a previous winning project, in which secondary school students were invited to submit designs for paintings to decorate the exterior of our gas governor kiosks to convey the message of green living in the community.

Embracing Innovation

Innovation is at the centre of our corporate culture, which together with implementation is an integral component of our philosophy of "Growth = innovation x implementation" for inspiring new ways of thinking that spur sustainable business growth. To that end, we focus on research and development and invite employees to propose their own ideas on how we can better achieve our sustainability objectives. During the year, the Group incurred over HK\$170 million in total research and development related expenditures in Hong Kong and mainland China.

Revenue per Employee

Company (HK\$ thousand)





CELEBRATION

To commemorate the 20th anniversary of the Towngas Volunteer Service Team, we organised a special luncheon and exhibition, which was attended by our community partners, social organisations and the beneficiaries of the Team's services.



In 2019, we continued a series of incentive programmes, including the Innovation Funding programme originally set up in 2016. Eligibility for Funding was extended to mainland China in 2019, enabling all employees across the Group to apply and bring their ideas to life. One of the ideas developed by our employees was a Water Heater Hydropower Generator Module that generates electricity from the normal water flow and stores it in a specially designed capacitor for flame ignition. Not only does this eliminate the pollution caused by the disposal of used batteries but also the inconvenience of having to replace them. Suitable for both new installations and for retrofitting existing water heaters, this innovative add-on device won the Innovation and Creativity Grand Award at the 2019 Hong Kong Awards for Industries.

Cultivating Integrity

In order to build and maintain the trust of stakeholders, it is essential that an organisation is, and is seen to be, ethical. Due to the efforts we make to promote integrity in our business, we at Towngas enjoy a good reputation for our high ethical standards. This was affirmed during the year when we received the Junzi Corporation Exemplary Award from the Hang Seng University of Hong Kong.

During the year, we continued to promote integrity in the workplace through a variety of activities, including more than 850 seminars and workshops for over 26,000 of our employees in Hong Kong and mainland China. A video and brochures with stories on ethical behaviour by employees were also produced. Other promotional initiatives included drawing, video and writing contests as well as an

overseas learning trip to promote the understanding and application of integrity at work.

Warmth and Care for Our Community

We are committed to caring for the community and bringing much needed services that help to improve health, social integration and personal wellbeing.

The involvement of our employees in the community can be traced back to as early as the 1970s. In 1999, the Towngas Volunteer Service Team was officially established and, since then, has accumulated over 960,000 hours of service to more than 6.9 million beneficiaries.

Service from the Heart

In 2019, the Towngas Volunteer Service Team reached an important milestone – its 20th anniversary of

service. Our volunteer services have continued to expand since the Team started, from serving the elderly to delivering festive foods, caring programmes for children and the disabled as well as organic farming, in a bid to deliver warmth and care to the community.

Our Chef Anchor programme was particularly helpful for those suffering from Mild Cognitive Impairment (MCI). Launched in 2017 with the Hong Kong Sheng Kung Hui Welfare Council, the innovative Chef Anchor programme was set up to alleviate the symptoms of MCI patients. It is the first procedural cooking training programme in Hong Kong to focus on MCI patients. To date, the programme has helped 200 elderly people to train their memory through its open-flame cooking classes, many of whom have shown encouraging results.

Supporting Those in Need

The Mad Dog Café charity programme is one of our signature charitable events to raise funds for installing electrical toilet washlets and bathroom ventilators in hostels for the elderly. In 2019, the event raised HK\$450,000, bringing total donations up to HK\$2.7 million since the launch of this charity programme in 2013.

The Towngas Gentle Breeze Movement is a programme established in 2013 to help schools in need in mainland China. To date, we have contributed more than RMB4 million in school supplies to remote areas in Jiangxi, Anhui, Jiangsu, Shandong, Guizhou, Shaanxi, Liaoning, Guangdong, Fujian, Hubei, Inner Mongolia and more.

In 2019, the programme was extended to Bazhong, Sichuan province and Qiqihar, Heilongjiang province. In this year's programme, we donated

school uniforms, teaching aids and other necessities to about 340 teachers and students. We also set up Towngas China Charity Libraries and refurbished their school facilities to improve the learning environment.

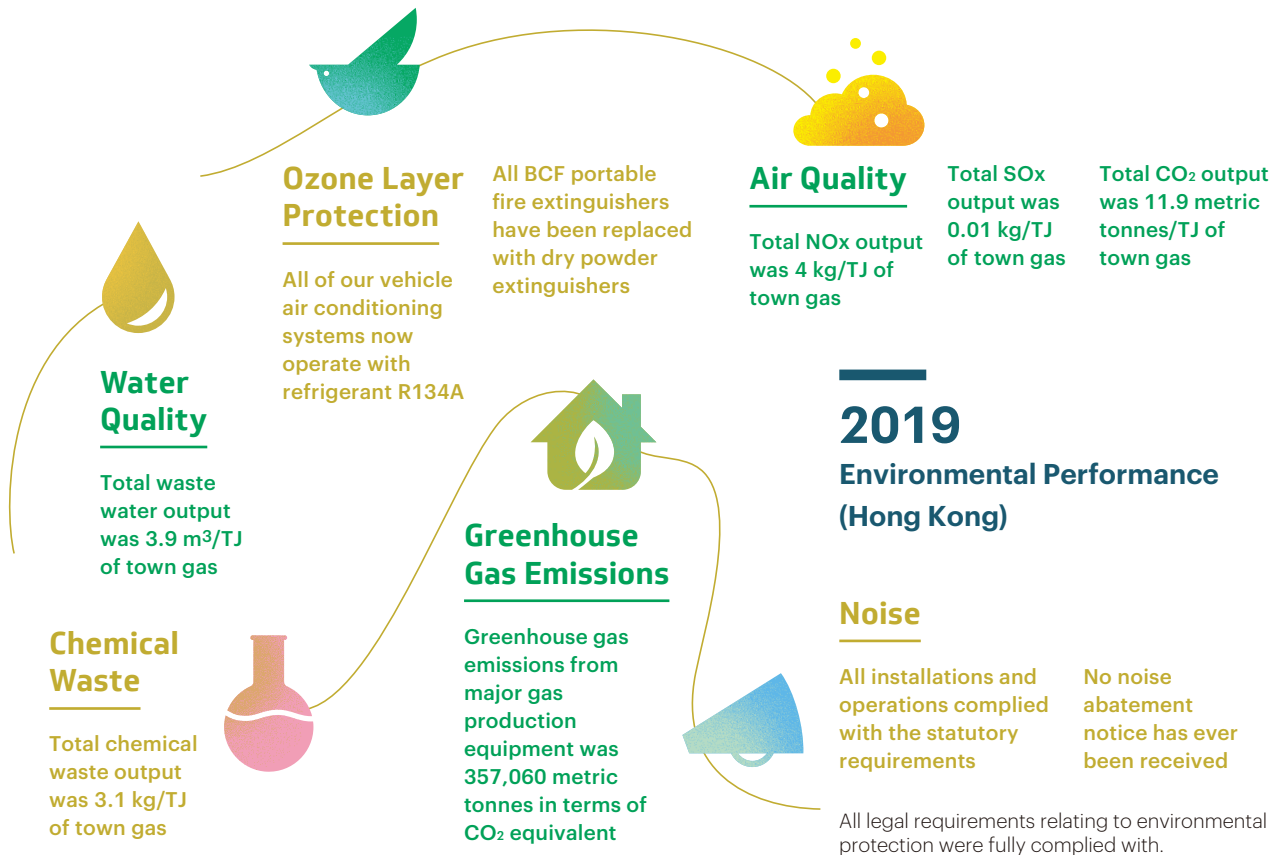
Building a Sustainable Workforce

We understand that our continuing success as a sustainable business depends heavily on the value we place on our people and the investments we make in their professional skills, health, safety and wellbeing.

In return, we have been recognised as a leading employer not only in Hong Kong and mainland China, but globally. This was affirmed by *Forbes* magazine, which gave Towngas a 199 ranking out of 2,000 top global employers on its World's Best Employers 2019 list, putting us in the top three of all Hong Kong companies. We were also the first runner-up in Hong Kong's Most Attractive Employer of the 2019 Randstad Employer Brand Awards. These recognitions highlighted our exceptional performance in promoting family-friendly employment policies and our focus on staff development.



Towngas Gentle Breeze Movement helps to improve learning environments through the donation of school supplies.



In common with other utility companies whose workers are ageing, we must also address the challenge of attracting new talent in order to build a sustainable workforce. Accordingly, we designated 2019 as the year for developing talent and recruiting young people.

Attracting New Talent

In the past two decades, Towngas has started a number of new businesses, so the need to attract new staff and replace existing staff who are retiring from our workforce has become paramount. Our recruitment efforts span different age groups and career categories. What’s more, many

of the positions we seek to fill, such as those in underground engineering, plant management and gas installations, are highly unique and technical.

We have been increasing our branding efforts to demonstrate that Towngas – even though we have a history of over 150 years – is a dynamic and innovative organisation in order to attract young talent who might harbour stereotypes about the Company.

To identify new talent, we have been expanding our sourcing channels, including earlier engagement with current university students and secondary school students. There is also

the challenge of convincing many secondary school graduates that technical jobs can be rewarding career choices. We have therefore stepped up our recruitment efforts through school talks and visits as well as job experience opportunities for students.

To familiarise potential recruits with our businesses, our Towngas Engineering Academy (TEA) launched the Career in a Nutshell programme for secondary school students, which offers them training and job shadowing opportunities. The programme has become widely accepted, with 90 students already registered for the 2019/2020 academic year.

Every year, we hire students as interns so they can learn more about our businesses and corporate culture. To provide work experience in mainland China, we joined the Scheme on Corporate Summer Internship on the Mainland and Overseas 2019, championed by the HKSAR Government, and Operation Zhang Qian by the Maritime Silk Road Society. In this eight-week internship programme, students were posted to the different locations where we operate, namely Shenzhen, Zhongshan, Suzhou, Jinan, Zhangjiagang and Ordos. We also recruited student interns from the 2018 Scheme after their graduation to support our businesses in Hong Kong and mainland China.

Enhancing Employee Competencies

In addition to recruiting new staff, it is equally important to retain and develop our existing younger colleagues. This means

understanding what motivates them and, in some cases, making their jobs more diversified and interesting. For example, we will involve younger staff in projects that are not necessarily related to their primary roles, or give them more leadership responsibilities as part of a clearly defined career path.

In order to develop future leaders, we continued the 18-month Towngas Leadership Competencies Acceleration Programme (TLC+), targeted at middle management staff. The focus of this programme is on business strategy and leadership. In 2019, a new batch of participants embarked on another round of this programme in their career development journey with us. A similar programme, the Young TLC+, was established in 2017 for younger staff across different businesses. It graduated its first cohort during the year.

To build a talent pipeline for our Network Operation teams, we launched our first Network Supervisor Trainee Programme in 2017. After two years of training in technical, communication and supervisory skills, the first batch of employees graduated in September 2019.

Our Career in a Nutshell programme introduces secondary school students to the gas industry with the aim of inspiring them to pursue a career with us.

Developing Gas Professionals

The TEA plays a significant role in gas education by providing engineering training for our employees and contractors in Hong Kong and mainland China, and also sharing professional knowledge with the industry and students.

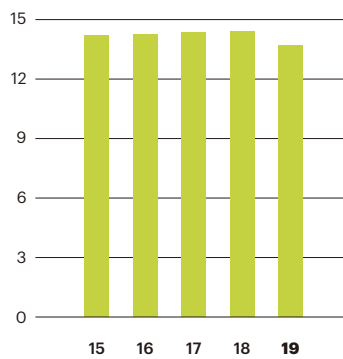
To attract young people to the gas industry, TEA participates in a wide range of career expos and other promotional activities. It is also one of the founding members of the Hong Kong Electrical and Mechanical Trade Promotion Working Group, as well as the new Corporate Tech Academy Network, which promotes Vocational and Professional Education and Training for the development of a skilled and professional workforce. The promotional activities we carry out are in addition to our apprenticeship programme, whose graduates are trained into well-qualified technicians who play an instrumental role in ensuring gas safety.

We also share gas engineering knowledge with our stakeholders in collaboration with different institutions and professional bodies. Towngas was the first and only gas company accredited by the Hong Kong Institution of Engineers and the Institution of Gas Engineers and Managers to provide gas engineers in mainland China with recognised Hong Kong-equivalent training



Town Gas Sales per Employee

Company (million MJ)



that satisfies the stringent requirements of the two professional organisations. This accreditation demonstrates the consistent quality and credibility of our operations across Hong Kong and mainland China. Moreover, we have partnered with the Hong Kong Vocational Training Council to offer a professional diploma in Gas Engineering, which graduated its first batch of students in July 2019.

Staff Health and Wellbeing

We endeavour to create a work environment that is fair, inclusive and fulfilling, and which allows our people to enjoy a rewarding career in balance with their personal lives.

In response to employee feedback, we made plans to introduce flexible hours for office staff in 2020, including flexible lunch-time arrangements, as part of our commitment to promote work-life balance. We also introduced Community Service

Leave so that employees who support our volunteer services can enjoy an extra day-off. Moreover, we enhanced our paid annual leave provisions and gas allowance scheme.

For longer-term retirement planning, we introduced an additional Mandatory Provident Fund (MPF) scheme by providing more fund choices for our current MPF scheme members.

Physical fitness under the theme “Fit for Life” was a primary focus of our staff activities in 2019. In order to promote a balanced and healthy lifestyle, we organised talks and workshops with doctors, physiotherapists and other medical practitioners on health awareness and stress management. On-site health checks and consultations were also held in our workplaces. To keep our staff healthy ahead of the flu season, we launched the Flu Prevention Campaign and offered staff members and their family subsidised flu shots.

Occupational Health and Safety

Once again, one of the highlights of the year was our annual HSE Walk. Held in June in Hong Kong with our joint venture partners in mainland China, it is organised for raising awareness of the importance of workplace safety and health. This year, more than 14,000 staff and family members joined the campaign.

During the year, we organised the Contractor Occupational Safety

and Health (OSH) Programme, which includes the Contractor Site Safety Award to recognise contractors with good safety performance and safe site conditions. Along with this event, we held the Contractor OSH Forum in which professionals from the Electrical and Mechanical Services Department, Hong Kong Physiotherapist’s Union and Occupational Safety and Health Council delivered talks on gas safety, prevention of work-related musculoskeletal disorders as well as working safely above ground. Over 200 contractors participated in the forum.

In our Quarterly OSH Programme, we highlighted topics such as ergonomics, preparedness for adverse weather and infectious disease. While the Joint Utilities Safety and Occupational Health Policy Group was under the chairmanship of Towngas in 2018/2019, we communicated OSH issues to the government, Occupational Safety and Health Council and other utility companies. We also hosted a forum on the future of OSH for the industry, during which participants exchanged their experiences on improving OSH performance.

In 2019, Towngas became one of the first city-gas companies to achieve ISO 45001: 2018 certification in its overall operations and was also recertified for the International Safe Workplace Programme.

Supplier Relationships

In 2019, we assessed our strategic suppliers against our requirements on corporate social responsibility (CSR) and conducted follow-up site visits with key suppliers in order to identify opportunities for improving their performance. In Hong Kong, we invited 33 long-term partners to complete our CSR assessment so that we could ascertain whether their commitment to CSR was still on track.

From August to December 2019, over 350 suppliers were invited to join our face-to-face communication sharing sessions in Hong Kong on integrating corporate ethics into their daily operations. These suppliers were also invited to use the new e-Tendering System, which not only helps to reduce the use of paper but is also an effective monitoring tool for the tendering process.

During the year, Towngas became the first utility in Hong Kong to be verified by BSI, an international business improvement and standards company, which determined we were in compliance with ISO 20400 Sustainable Procurement guidance standards. We also continued to work closely with our suppliers who are part of our green supply chain to help them comply with our procurement policy.

Creating Long-term Value for our Stakeholders

At Towngas, we are focused on creating long-term value for all our stakeholders, including our investors, associates, suppliers, the people we employ and the communities we serve. This is critical to our success as a company and fundamental to the way we do business.

We pay particular attention to the issues raised by our stakeholders in our ongoing engagement with them. Their views help us in shaping our policies and practices with regard to sustainability and provide us with insights on how we can improve our environmental, social and governance performance. In doing so, we are continually raising our standards of social and ethical behaviour and encourage our staff, suppliers, contractors and peers in the industry to do the same.

In future, we will continue to aspire towards fulfilling our vision of being “Asia’s leading clean energy supplier and quality service provider, with a focus on innovation and environmental-friendliness.”



Business Projects in 2019

Utility Businesses in Mainland China

	Year of Establishment	Project Investment Rmb M	Registered Capital Rmb M	Equity Share %
Towngas Piped City-Gas Projects				
Guangdong Province				
Panyu	1994	260	105	80%
Zhongshan	1995	240	96	70%
Dongyong	1998	178	75	83%
Shenzhen	2004	-	2,877	26%
Chaoan	2007	185	99	60%
Chaozhou Raoping	2011	189	106	60%
Central China				
Wuhan	2003	1,000	420	49%
Xinmi	2009	205	85	100%
Eastern China				
Yixing	2001	246	124	80%
Taizhou	2002	200	83	65%
Zhangjiagang	2003	200	100	50%
Wujiang	2003	150	60	80%
Xuzhou	2004	245	125	80%
Suining	2009	155	67	100%
Fengxian	2009	60	31	100%
Peixian	2015	300	100	100%
Danyang	2004	150	60	80%
Jintan	2006	150	60	60%
Tongling	2006	240	100	70%
Suzhou Industrial Park	2001	600	200	55%
Changzhou	2003	248	166	50%
Nanjing	2003	1,200	700	49%
Fengcheng	2007	206	88	55%
Pingxiang	2009	297	105	100%
Jiangxi	2009	52	26	56%
Zhangshu	2009	86	34	100%
Yonganzhou	2010	100	68	94%
Hangzhou	2013	2,988	1,195	24%
Shandong Province				
Jinan East	2003	610	470	49%
Northern China				
Jilin	2005	247	100	63%
Beijing Economic-technological Development Area	2005	111	44	49%
Hebei Jingxian	2011	186	79	81%
Northwestern China				
Xi'an	2006	1,668	1,000	49%
Hainan Province				
Qionghai	2008	110	50	49%
Midstream Projects				
Guangdong LNG	2004	8,595	2,578	3%
Anhui NG	2005	-	336	21%
Hebei NG	2005	5,040	1,680	43%
Jilin NG	2007	360	220	49%
Henan NG	2012	125	60	49%
Jintan NG (Phase 1)	2013	300	200	39%
Jintan NG (Phase 2)	2018	890	300	100%
Huanghua Port LNG	2017	90	90	20%
Taizhou (District High Pressure Network)	2019	450	150	48%
LNG Refilling Station				
Nanjing (Marine)	2014	600	217	33%

	Year of Establishment	Project Investment Rmb M	Registered Capital Rmb M	Equity Share %
Water/Waste Treatment Projects				
Wujiang	2005	2,450	860	80%
Suzhou Industrial Park	2005	3,600	1,200	50%
Wuhu	2005	1,000	400	75%
Suzhou Industrial Park (Industrial Wastewater Treatment)	2011	550	185	49%
Maanshan	2013	607	213	100%
Jiangbei	2013	1,049	374	100%
Suzhou Industrial Park (Food Waste Processing and Utilisation)	2016	220	75	55%
Foshan Water Environmental Protection	2018	832	832	27%

Towngas China Piped City-Gas Projects

Guangdong Province

Foshan
Shaoguan
Qingyuan
Yangdong
Fengxi

Eastern China

Nanjing Gaochun
Dafeng
Tongshan
Hubei Zhongxiang
Maanshan
Bowang
Zhengpugang Xin Qu
Modern Industrial Zone

Wuhu Fanchang
Wuhu Jiangbei
Anqing
Chizhou
Tunxi
Huangshan
Huizhou
Tongxiang
Huzhou
Yuhang
Songyang
Changjiu
Fuzhou
Jiujiang
Wuning
Xiushui
Yifeng
Changting

Shandong Province

Jimo
Laoshan
Laoshan Bay

Zibo
Zibo Lvbo

Longkou
Jinan West
Weifang
Weihai
Taian
Chiping
Linqu
Laiyang
Zhaoyuan
Pingyin
Feicheng
Boxing Economic
Development Zone
Yangxin
Wulian

Hunan Province

Miluo

Northeastern China

Benxi
Chaoyang
Tieling
Fuxin
Shenyang Coastal
Economic Zone
Yingkou
Dalian Changxingdao
Dalian Economic
and Technical
Development Zone
Anshan
Lvshun
Kazuo
Beipiao
Wafangdian
Xinqiu
Jianping

Changchun
Gongzhuling
Siping
Qiqihar

Hebei Province

Qinhuangdao
Yanshan
Cangxian
Mengcun
Shijiazhuang

Inner Mongolia

Baotou

Southwestern China

Ziyang
Weiyuan
Pengxi
Lezhi
Pingchang
Dayi
Yuechi
Cangxi
Chengdu
Zhongjiang
Jianyang
Pengshan
Mianyang
Xinjin
Xindu
Mianzhu
Jiajiang
Qijiang
Guilin
Zhongwei (Fusui)
Xingyi
Luliang
Liujiang District,
Liuzhou

Midstream Projects

Xuancheng NG
Taian Taigang
Inner Mongolia NG
Jinan-Liaocheng Pipeline & Chiping South Citygate

CNG Refilling Stations

Qiqihar (Lianfu)
Qiqihar (Xingqixiang)

Distributed Energy Systems

Sichuan
Shenyang Economic and Technical Development
Zone
Jiawang District, Xuzhou
Jimo Chuangzhi New District, Qingdao
Yangxin Economic & Technological Development
Zone, Binzhou
Changchun
Guilin
Tangshan Chengnan Economic Development Zone
Boxing Economic Development Zone, Binzhou
Xuzhou Biomedical Industrial Park
Maanshan Economic and Technological
Development Zone South District
Zhengzhou Xinmi Yinji International Tourism Resort
Shenzhen Gas Building
Dangtu Economic Development Zone
Northern District
Lishui Songyang Wangcun Industrial Park
Tangshan Fengnan Lingang Economic
Development Zone
Anhui Electricity Company
Changzhou Photovoltaic Industrial Park

Other Projects

Zhuojia Public Engineering
Towngas Natural Gas Sales
U-Tech (Guang Dong) Engineering
Liaoning Clean Energy Group

New Energy and Other Projects

	Year of Establishment	Project Investment Rmb M	Registered Capital Rmb M	Equity Share %
New Energy Projects				
Coal Mining				
Inner Mongolia Ordos Kejian	2011	681	486	100%
Coal-Based Chemicals				
Jiangxi Fengcheng	2009	1,250	350	40%
Inner Mongolia Ordos	2009	1,713	1,017	100%
CNG/LNG Refilling Stations				
Shaanxi Xianyang	2008	12	12	100%
Shaanxi Huitai	2010	54	27	100%
Shaanxi Lueyang	2014	21	13	100%
Shaanxi Fengxiang	2014	30	15	100%
Shaanxi Shenmu	2015	60	38	100%
Shaanxi Baoji	2015	29	14	100%
Shaanxi Hancheng	2016	46	41	90%
Shanxi Yuanping	2008	40	20	42%
Shanxi Lingshi	2013	25	20	75%
Shanxi Xinzhou	2016	30	15	100%
Shandong Chiping	2010	30	15	100%
Shandong Dongping	2010	43	26	91%
Shandong Jiaxiang	2012	50	28	100%
Shandong Weishan	2014	58	29	100%
Shandong Shanxian	2014	28	14	100%
Shandong Linqing	2014	22	13	100%
Shandong Heze	2015	23	13	90%
Hebei Shijiazhuang	2014	65	31	100%
Xingtai (Gangxing)	2014	20	17	80%
Xingtai (Xinghua)	2016	24	23	80%
Henan Xinmi	2010	29	15	100%
Henan Kaifeng	2013	29	15	100%
Henan Linzhou	2013	30	20	100%
Henan Nanyang	2015	14	10	100%
Henan Wuyang	2017	15	15	85%
Inner Mongolia Huhhot	2014	28	14	90%
Inner Mongolia Wulatezhong Qi	2015	11	8	100%
Inner Mongolia Xiwuzhumuqin Qi	2015	30	15	100%
Inner Mongolia Chifeng	2015	30	15	100%
Inner Mongolia Chaha'eryouyiqian Qi	2015	30	15	100%
Inner Mongolia Xilingol	2016	30	15	100%
Inner Mongolia Ulanqab Huade	2016	29	14	100%
Inner Mongolia Ulanqab Chahar	2016	15	11	100%
Inner Mongolia Bayannur Uradqian Qi	2016	15	7	100%
Inner Mongolia Bayannur Linhe	2016	14	10	90%
Inner Mongolia Bayannur Hanggin	2016	13	10	90%
Ningxia Guangwuxian	2015	15	11	100%
Ningxia Qingtongxia	2015	21	15	100%
Ningxia Jinyintan	2015	28	14	100%
Ningxia Zhongwei	2016	18	12	100%
Ningxia Zhongwei Haixing Development Zone	2016	30	15	100%
Jiangsu Xuzhou	2015	40	20	80%
Anhui Maanshan	2006	15	11	30%
Jiangxi Pengze	2015	45	30	70%
Guangdong Guangzhou	2013	26	13	100%
Upstream Projects				
Shanxi LCBM	2006	600	200	70%
Jilin Tianyuan	2007	140	5	50%
Xuzhou COG	2014	450	150	80%

	Year of Establishment	Project Investment Rmb M	Registered Capital Rmb M	Equity Share %
New Energy Projects				
Coal Logistics Project				
Shandong Jining Jiexianggang Logistics Port	2011	540	180	88%
Biomass				
Zhangjiagang	2014	850	392	100%
Hubei Jingzhou	2017	170	134	100%
Luanzhou	2017	280	140	100%
Cangzhou (Biofuel)	2019	380	200	100%
Oilfield Project				
Phetchabun Province in Thailand	2012	USD 181M	USD 12,000	100%
Telecommunication Projects				
Shandong Jinan	2007	80	40	90%
Shandong Jinan Chibo	2009	504	168	87%
Shandong Laiyang	2011	14	USD 1.6M	90%
Xuzhou Fengxian	2011	11	8	100%
Xuzhou Peixian	2012	13	9	100%
Liaoning Dalian DETA	2010	14	10	49%
Dalian Yida	2011	190	76	90%
Harbin	2013	158	63	80%
Beijing Zhongjing	2014	14	10	49%
Beijing Chibo	2014	14	10	99%
Dongguan	2013	240	80	60%
Shenzhen (Qianhai)	2014	359	180	100%
Shenzhen (Interlink Connectivity)	2015	100	40	30%
Yingtong TGT Network Services (Shenzhen)	2019	250	100	49%
Other Projects				
Shenyang Sanquan Construction Supervisory	2011	4	3	60%
ECO Engineering Management (Xi'an)	2014	13	9	100%
Suzhou Industrial Park Broad Energy Services	2012	170	71	25%
GH Yixing Ecology	2013	184	184	100%
Dalian (New Energy Technology)	2015	USD 4.75M	USD 4.75M	55%
M-Tech	2011	60	60	100%
GH-Fusion	2001	87	43	50%
G-Tech	2012	77.5	41	100%
S-Tech (Wuhan)	2011	90	51	100%
S-Tech (Zhuhai)	2014	14	7	100%
ECO Engineering Management (Shenzhen)	2014	30	15	100%
Towngas Life Style	2015	14	10	100%
Towngas Payment Technology (Shenzhen)	2015	50	28	100%
Hong Kong & China Gas International Energy Trading	2016	125	50	100%
Mia Cucina Kitchen Cabinets (Shenzhen)	2017	125	50	100%
Inner Mongolia Ordos Carbon Material	2017	339	240	100%
Towngas Agriculture Investment (Nanjing)	2019	-	30	100%